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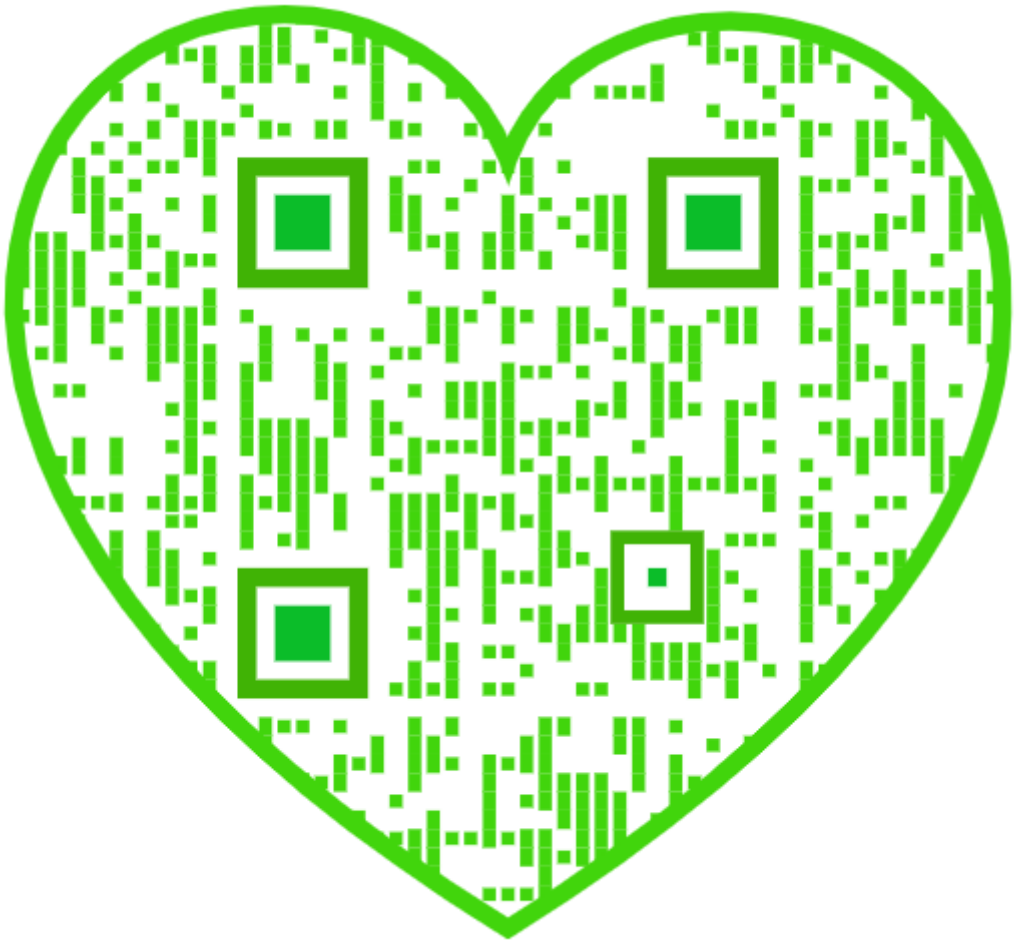
JUL 28 1913

BAKER ICE MACHINE CO.

OMAHA
NEBRASKA
:U. S. A:

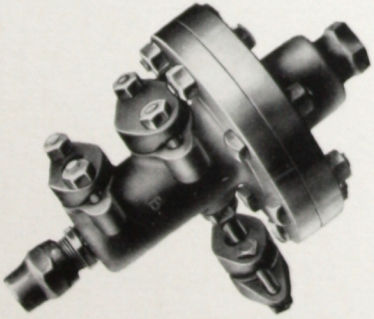
CATALOG No. 31



Refrigeration Catalog

Baker Ice Machine Co.

Manufacturers of Ice Making
and Refrigerating Machinery



OUR PATENT AUTOMATIC EXPANSION VALVE
See Page 19 for description

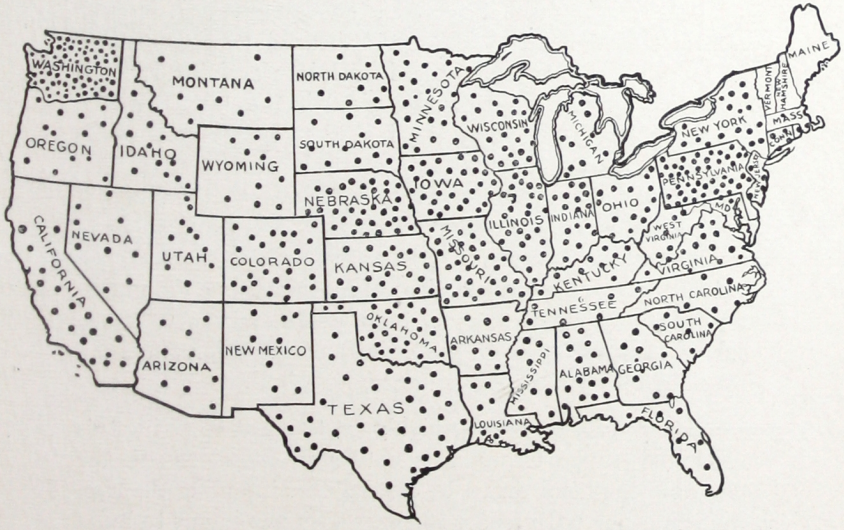
Designers of Cold Storage
and Ice Making Plants

General Offices and Factory

1901-1929 Nicholas Street, OMAHA, NEB. U.S.A.

The Largest Factory in the United States Devoted Exclusively to the Manufacturing of Medium Sized Refrigerating and Ice Making Machines.

A Continuous Cold Wave From Shore to Shore Produced With Baker Ice and Refrigerating Machinery



Each dot represents one of our Refrigerating Plants doing actual work in the U. S. A.

We have also many in foreign countries.

Baker Ice Machine Co.

Builders of Ice and Refrigerating Machinery
Omaha, Nebraska
U. S. A.

Ice Making and Refrigerating Machinery That Sells Itself

AN ice making or refrigerating machine is something that people do not buy every year or two, and when they are in the market for such an equipment it is very essential that they select a plant that bears a good reputation, and one that will do the required work in a satisfactory and economical manner. Just such a plant is the "BAKER."

We are justly proud of the fact that a careful analysis of our records for the past few years shows that more than fifty per cent of our sales have been made directly or indirectly through the recommendation of parties for whom we have already installed plants. This we regard as very strong evidence of the high grade class of machinery we are manufacturing, and emanating as it does from purely unbiased sources, is probably even weightier and more forceful than any claims we could make on our own behalf.

While we are, of course, highly gratified at receiving this unsolicited support, we are naturally conscious of the obligation it places on us to continue maintaining the high reputation our patrons are so generously helping us to build up. It will ever be our endeavor to give honest and efficient service to our customers, and to furnish them with a plant at as low a price as is consistent with the highest grade of material and workmanship, and one that will make them as delighted with its operation as we will be with the knowledge that we have given them satisfaction, and added one more loyal supporter to our list.

Baker Ice Machine Company

Omaha, Nebraska

U. S. A.

Our Special Bulletins

We have separate *Illustrated Bulletins* showing the construction of plants for

CONFECTIONERS
ICE CREAM MANUFACTURERS
CHEESE MAKERS
CREAMERIES
GROCERS
BUTCHERS
FISH AND OYSTER DEALERS
BAKERIES
FUR STORAGE
PRODUCE AND FRUIT STORAGE
HOTELS
CAFES, ETC.

ALSO

Water Cooling Bulletins of plants for *bottlers*, *factories*, *apartment houses*, *offices* and *other large buildings*. We would be pleased to mail you either that you may be particularly interested in.

We also issue a catalog showing a full line of our *High Grade Ammonia Fittings*, *Valves*, *etc.*, which we shall be pleased to send on application.

Patents Owned and Controlled Exclusively by Us

Our Compressor Valves have a distinct individuality and are thoroughly covered by patents. They are unequaled for their long life, noiseless operation, and general safety features, and the workmanship and material are of the very highest grade. See page 15.

Our Double Pipe Condenser Fittings and Water Return Bends are patented, and ours is the only bend which is held in place by a single bolt. It is simple to remove and makes the cleaning out of a double pipe condenser extremely simple. There are no screw joints exposed to the ammonia pressure, and every pipe can be readily removed without disturbing any other pipe in the condenser. See page 18.

Our Patent Double Pipe Flooded Type Brine Cooler has all the advantages of the flooded system and none of the disadvantages. Our apparatus is at all times under the eye of the operator, while other flooded systems are submerged in a tank of brine beyond the control or sight of the party operating the plant. The increase in the capacity of the machine with our flooded system is very marked. See page 21.

Our Patent Triplex Water Cooler is for reducing the temperature of water for bottlers' use or for drinking water, or any other purpose where quick and positive action is required. This cooler takes up less space and is simpler and more economical than any other on the market today. See page 20.

Our Patent Automatic Expansion Valve is for the purpose of regulating the pressure of the expanding ammonia gas in cold storage and ice making plants, and in regulating the pressure it thereby regulates the temperatures. See page 19.

Advantages of the Baker Single-Acting Compressors

Our vertical single-acting compressors are the most practical and economical for many reasons. The piston of our vertical compressor is absolutely balanced, the work and wear being equally distributed all around the cylinder. weight of piston, rings, rods and moving parts having no effect toward throwing the wear on one side of the cylinder more than another. As the wear is all downward, the clearance in our single-acting vertical compressor can be safely reduced to the minimum without fear of knocking out a cylinder head. Valves can be kept in better condition, as the valves seat on a horizontal plane, and can therefore be depended upon not to wear away from the valve seats through weight of the valves. No packing or stuffing boxes against condensing pressure, therefore no leakage of ammonia.

Our compressors are constructed with a view of their being operated at maximum piston speed. In tests we have operated them at from 100 to 200 revolutions per minute, and at these speeds the compressors showed no undue strain, and at this high speed the valves were quick and positive. Our improved cushion feature makes them noiseless under every condition. The valves are of ample area and small lift, and, being made very light, respond perfectly when running at high speeds.

We claim our compressor is superior to any other on the market for the following reasons:

First—Because it will handle "wet" or "dry" gas equally well; because it has no stuffing boxes to give trouble, as it takes the gas in at the top end or head and expels it through the head; that it will operate safely with a clearance of 1-64 inch, and that clearance is easily adjusted.

Second—Because it has the fewest working parts of any machine made, and these parts are extremely heavy and well built; and because the frame on this machine has many times the strength and rigidity of any other type of machine, owing to its tubular construction.

Third—Because it has the strongest crank-shaft and several times the bearing surface of any other machine; because it is well lubricated at all times, and dust and grit cannot reach the working parts.

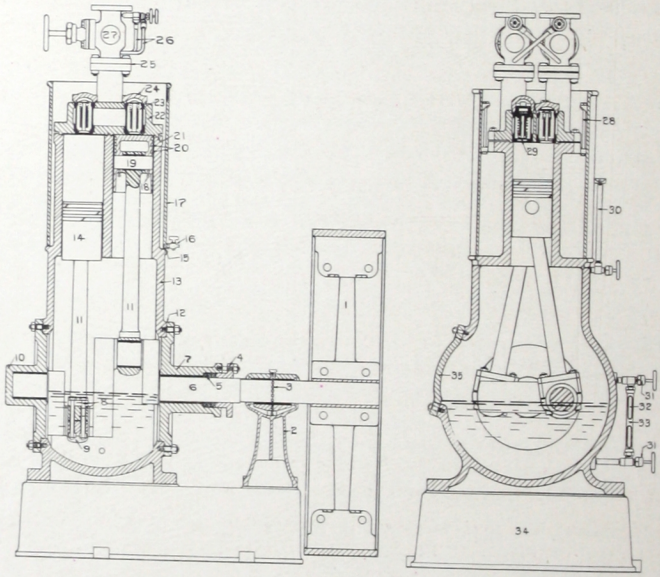
Fourth—Because it has well proportioned suction and discharge valves, allowing the cylinders to readily fill with gas at full pressure; that the four valves can be removed in a few minutes without touching any pipe connection; and that, on account of having no stuffing boxes, it does not waste a lot of power in stuffing box friction, nor lose any ammonia whatever through this source.

Fifth—Because it differs radically from the usual type of single-acting vertical compressors by having all the good features of that type, but none of the disadvantages. Other single-acting machines have two stuffing boxes—ours have none; other types have the suction valves in the pistons, compelling the removal of cylinder head to get at the same; other types have many working parts to each one of ours; and this complicated, cumbersome construction adds to the power required to drive the machine, as well as to the cost of keeping it in repair.

Sixth—Because this machine occupies only one-half to one-third the floor space required by other types, and is clean and free from oil and dirt; because the bearings are always working in a bath of clean oil, without wasting any, and that on account of the extreme simplicity of this machine, it is practically fool-proof and will give good service in some hands where other styles of machines could not be used at all on account of lack of skilled attendance. This feature makes our type of machine ideally suited for installations in isolated places where no skilled help is available, as the simple but massive construction and copious lubrication, together with the absence of stuffing box grief, makes the machine extremely easy to handle.

We manufacture all sizes of ice making and refrigerating machinery up to 50 tons daily capacity, for all purposes, either "brine circulation" or "direct expansion" system.

Sectional Cut of Compressor



1—Fly Wheel.
2—Out Board Bearing.
3—Oiling Chain.
4—Packing Gland.
5—Shaft Packing.
6—Crank Shaft.
7—Main Bearing.
8—Crank Pin Box Bolts.
9—Crank Pin Box.
10—Blind Bearing.
11—Connecting Rods.
12—Bearing Gaskets.
13—Compressor Frame.
14—Pistons
15—Water Jacket Gaskets.
16—Drain Cock.
17—Water Jacket.
18—Piston Pin Set Screws.
19—Piston Pin.
20—Piston Rings.
21—Cylinder Head Gaskets.
22—Cylinder Head.
23—Suction Valves.
24—Valve Caps.
25—Main Valve Gaskets.
26—By-Pass Connections.
27—Main Valve.
28—Water Jacket Bolts.
29—Discharge Valve.
30—Equalizing Line.
31—Gauge Glass Valves.
32—Gauge Glass.
33—Gauge Glass Guard.
34—Bed Plate.
35—Cover Plate.

Sectional drawing showing construction in detail of the simple and compact design of our Ammonia Compressors. Note the automatic oiling system.

Our Compressor Construction

We particularly want to call your attention to the construction of our Compressor in its different parts, as we believe our success is largely due to the special features found in our Compressor only, as well as to the fact that we use nothing but the highest grade of material. The metals used in the construction of our Compressor are semi-steel, forged steel and tool steel.

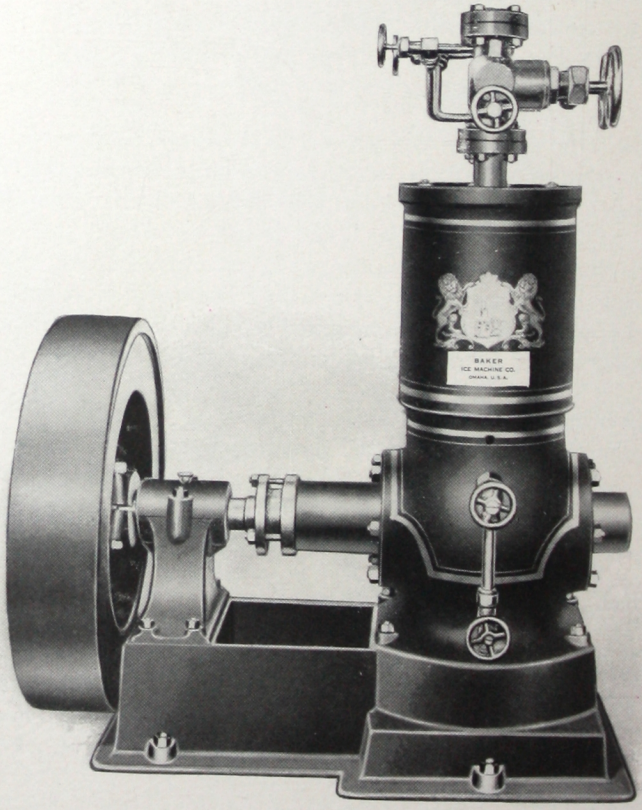
The valves are the most important part of any compressor, and upon the proper operation of them depends in a large measure the capacity of the compressor, more especially the discharge valve, as this valve handles the high pressure gas, and therefore should open and close quickly; otherwise too much pressure is generated in the cylinder and unnecessary power consumed; and, should this valve be retarded in closing, the leaking back of the compressed gas into the cylinders will reduce the capacity and cause a further loss of power.

The *Discharge Valves* of our Compressor, as you will notice from the cut on page 15, are so constructed that they open and close with the least possible amount of resistance, and, owing to our special cushion effect, are practically noiseless. The construction of the cushioning piston is such that it does not in any way retard the return of the valve to its seat.

The *Suction Valve Stems* (see cut on page 15) are turned out of a solid bar of tool steel, therefore using only the heart of the metal. The seats on both valves are narrow, therefore open quickly, and are also made of tool steel. The construction of both discharge and suction valves is such that the greatest possible amount of opening for the gas passage is given with the least possible amount of lift or movement of the valve.

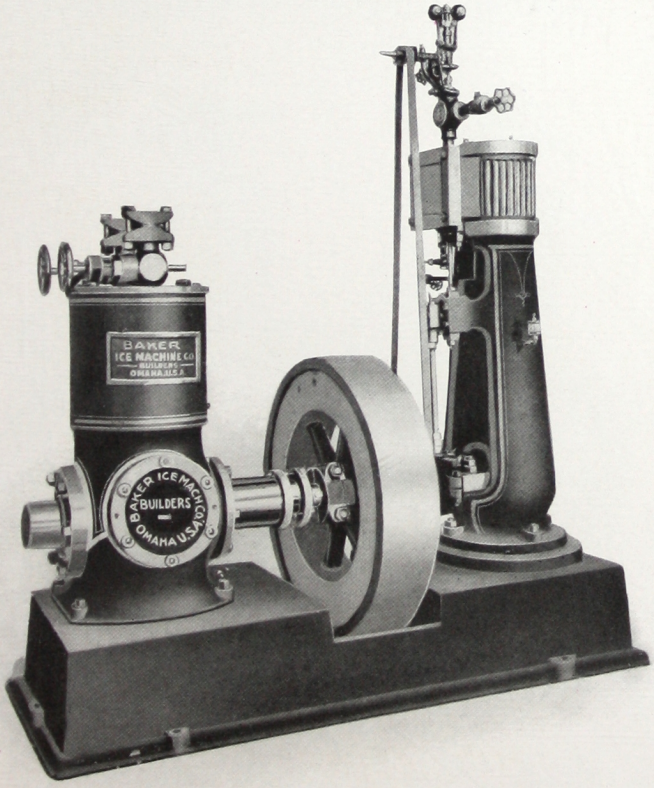
The construction of our valves differs in this essential from any other valves on the market, and for simplicity and durability are unequaled. Our machinists are all experts in this class of work, and it is these very essential components, together with years of experience in the manufacture of refrigerating machinery, that has made the *Baker Ice Machine Company's* Compressor the best in the world.

Self-Contained Compressor



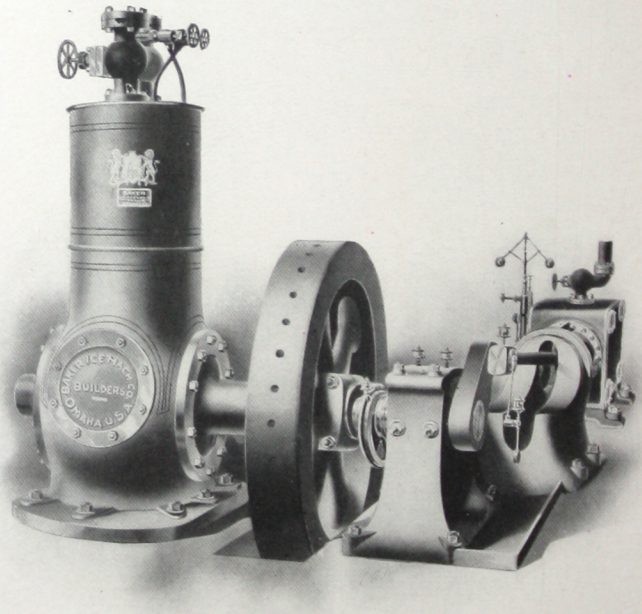
Belt driven. Automatically oiled. Sizes 1 to 10 tons daily capacity.

Self-Contained Compressor



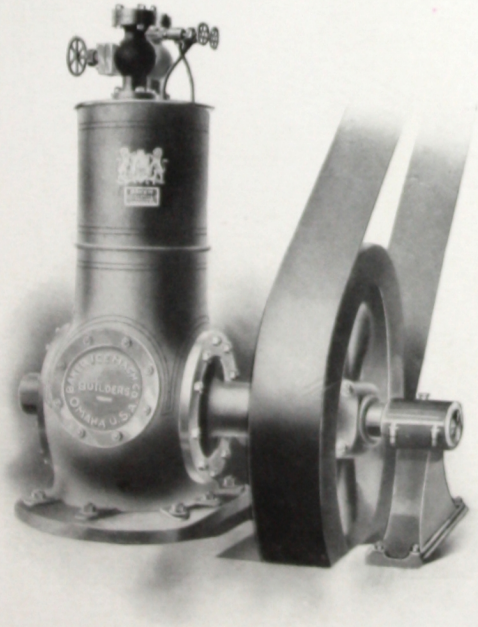
Automatically oiled. Direct connected to steam engine.
Sizes 1 to 10 tons daily capacity.

Automatically Oiled Compressor



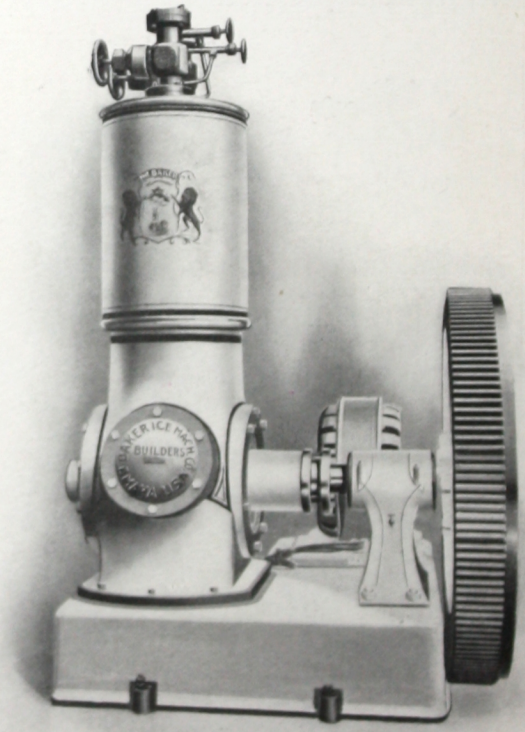
Direct connected to high-grade Corliss steam engine.
Sizes 10 to 50 tons daily capacity.

Automatically Oiled Compressor



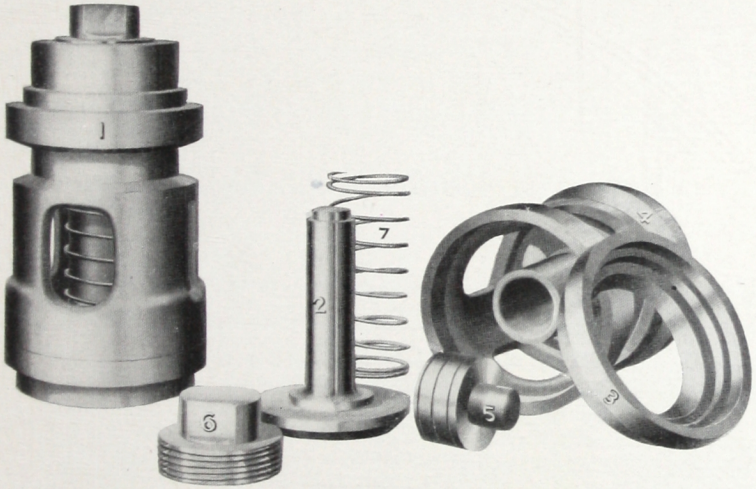
This type can be driven by belt, silent chain or any other available power. Sizes 10 to 50 tons daily capacity.

Self-Contained Compressor



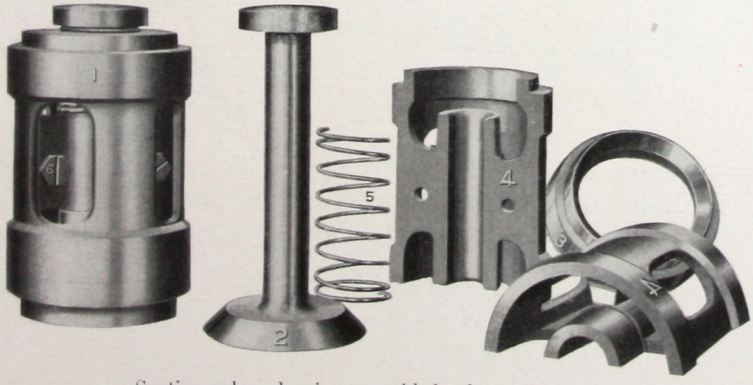
Motor-gear driven. Direct or alternating type motor.
Sizes 1 to 6 tons daily capacity.

Standard Ammonia Compressor Valves



Discharge valve, showing assembled valve and its parts.

1—Complete Discharge Valve
2—Discharge Valve Stem
3—Discharge Valve Seat
4—Discharge Valve Cage
5—Discharge Valve Cushion Piston
6—Discharge Valve Piston Cap
7—Discharge Valve Spring

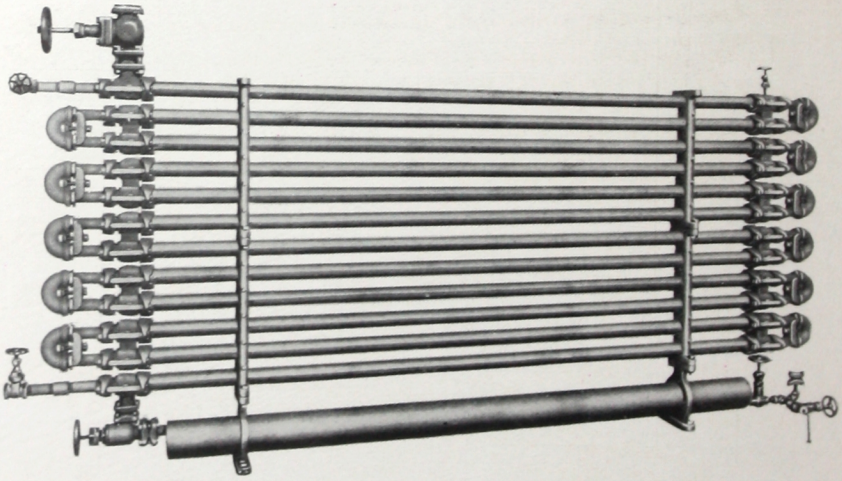


Suction valve, showing assembled valve and its parts.

1—Complete Suction Valve
2—Suction Valve Stem
3—Suction Valve Seat
4—Suction Valve Cage
5—Suction Valve Spring
6—Suction Valve Screw, shown in complete valve

In ordering parts give number of machine stamped on cover plate.

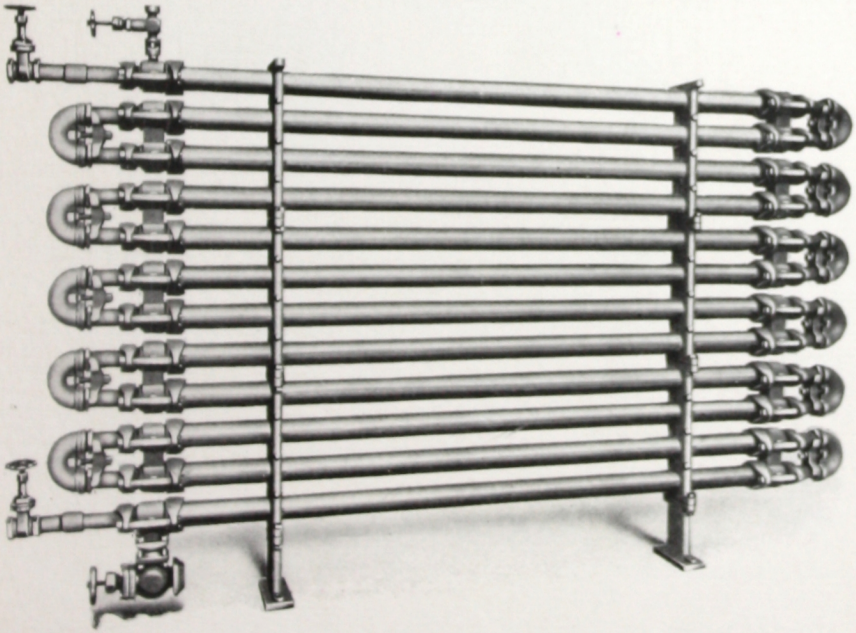
Improved Double Pipe Condenser



Special heavy fittings and special ammonia pipe used in these parts. Notice the simple and effective construction and how easily the joints can be taken apart.

See page 18 for details of Patent Return Bend of our Condenser.

Improved Double Pipe Brine Cooler

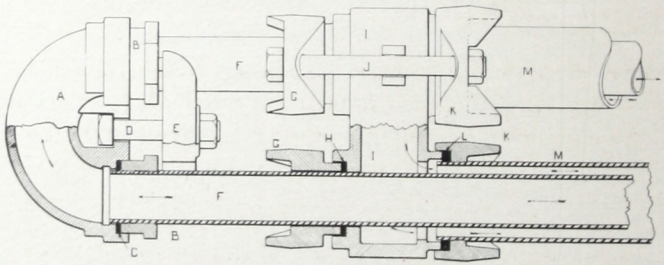


Special heavy fittings and special ammonia pipe used in these parts. Notice the simple and effective construction and how easily the joints can be taken apart.

See page 18 for details of Patent Return Bend of our Brine Cooler.

Patented Return Bends

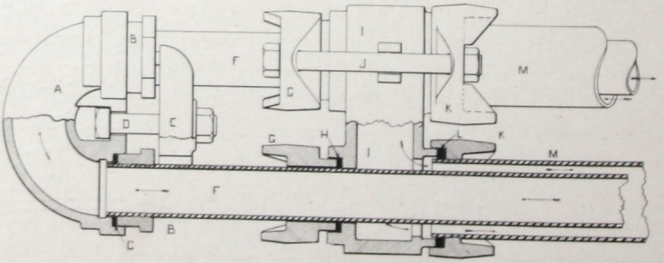
We show below drawings and illustrations of our Patent Return Bend, as used on our Double Pipe Ammonia Condenser and Brine Cooler, which is but one of many patents in our plants owned and controlled exclusively by us. This return bend is so constructed that anyone with a wrench can readily put it together, or replace any part that may be required. The water or brine return bend is held in place by a single bolt. The pressure exerted by this bolt is central, and in this way draws up the return bend even on both sides, thereby getting a tight joint with the least possible amount of pressure, and without any screwed joints.



PATENT DOUBLE PIPE RETURN BEND FOR AMMONIA CONDENSER

A—Water Return Bend
B—Gland for Water Return Bend
C—Gasket for Water Return Bend
D—Bolt
E—Clamp
F—Condensing Water Pipe
G—Slip Flange
H—Gasket for Ammonia Return Bend
I—Ammonia Return Bend
J—Bolt
K—Screw Flange
L—Gasket
M—Ammonia Pipe

See Condenser, page 16.

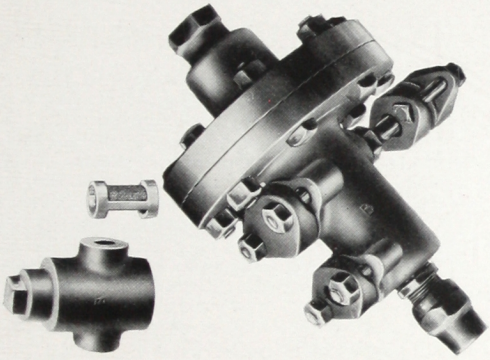


PATENT DOUBLE PIPE RETURN BEND FOR BRINE COOLER

A—Brine Return Bend
B—Gland for Brine Return Bend
C—Gasket for Brine Return Bend
D—Bolt
E—Clamp
F—Brine Pipe
G—Slip Flange
H—Gasket for Ammonia Return Bend
I—Ammonia Return Bend
J—Bolt
K—Screw Flange
L—Gasket
M—Ammonia Pipe

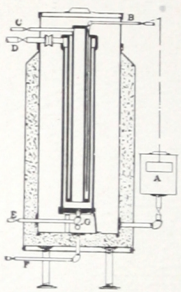
See Brine Cooler, page 17.

Automatic Ammonia Expansion Valve



Our newly Patented Automatic Expansion Valve is designed for the purpose of regulating the back pressure in ammonia systems, and by so doing, the temperature is regulated in the cold storage rooms, or wherever this valve is used. It is absolutely efficient and reliable in its action, and we mention a few of the many instances where it is of great value in regulating the back pressure: In direct expansion cold storage rooms; in indirect combined brine and ammonia cold storage rooms where hold-over tanks are used; in ammonia coils submerged in a brine tank; and also on our Patented Flooded Type Brine Cooler, or on the regular Standard Double Pipe Brine Cooler. In installations where there are two or three or more refrigerator boxes located in different parts of the building or on different floors, it requires very fine adjustment of the ordinary expansion valves, and even with the greatest care and attention they frequently require readjustment several times a day, and even then they never work in perfect harmony, for the reason that one or more of the valves may get choked with scale or dirt, thus reducing the refrigeration of the boxes and causing considerable trouble and annoyance. Our Patent Automatic Expansion Valve eliminates trouble of this kind entirely because of its construction, and the one main valve can be opened or closed in the machine room with every assurance that an exact back pressure will be obtained in the different boxes or chambers where these valves are located. Our Patent Automatic Expansion Valve is so constructed that the flow of liquid ammonia is regulated to accommodate the size of the compressor which is taking the gas away from the low pressure side, or what is known as the expansion side. It is particularly adapted for placing in plants where the cold storage rooms are scattered throughout the building. These valves are giving the highest satisfaction wherever they are in use, and are being universally adopted because of their economy and convenience.

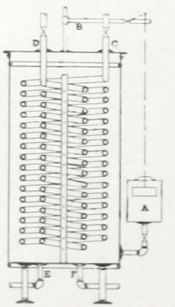
Our Special Water-Cooling Systems



A—Float Tank
B—Water Supply
C—Ammonia Expansion Valve
D—Ammonia Suction Valve
E—Blow Off Valve
F—Drain
G—Water Supply to Pump

Triple Pipe Gravity System

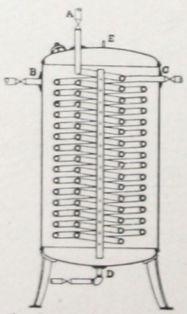
This is our new patented type of Water Cooler and is used extensively for bottler's use and for cooling water for buildings and factories. The cooling tank consists of two tanks, one inside the other, and the space between is thoroughly insulated with cork insulation. This cooling tank is made in different sizes, cooling from 500 to 4,000 gallons of water in ten hours through a range of 20 to 40 degrees F. This cooler is patented and is known as the triplex system. There are no coils inside the water cooling tank, but the cooling surface is of very large pipes thoroughly tinned throughout. The water passes over a tinned surface so that by the time the water has passed over this surface it is reduced almost to freezing point. The entire apparatus is extremely simple in construction and very effective. One of the principal advantages with this device is that five minutes after starting the plant up you can get as cold water as you desire and a steady stream of cold water can be taken from the apparatus continually. The system is similar to the gravity system described below and requires a triplex or force pump to operate it successfully. There is also a float on this for regulating the level of the water in the main tank.



A—Float Tank
B—Water Supply
C—Ammonia Expansion Valve
D—Ammonia Suction Valve
E—Water Supply to Pump
F—Drain

Gravity System

This system is used where the water pressure is not strong enough to raise the water to the faucets on the upper floors of the building. After the plant is once in operation it is to a certain extent a balance system, as the fall on the down leg equalizes the power required to lift the water on the up leg from which the water to the faucets is taken. There is a float attached to the side of this tank through which the city water is brought after passing through the filter, which regulates the amount of water in the main tank. The advantage of keeping the water supply at a given level in the tank is that you can thereby get a greater efficiency out of the coils in the water cooler tank. This type has a quantity of galvanized spiral coils and the tank is made of galvanized sheet metal.

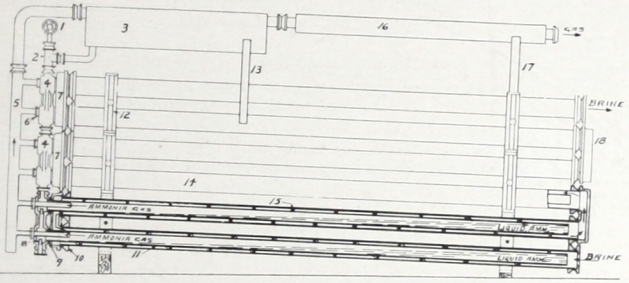


A—Ammonia Suction
B—City Water Supply
C—Ammonia Expansion Valve
D—Blow Off
E—Air Cock

Pressure System

This system is operated in the following manner: There is a heavy iron tank made to withstand the city pressure where the tank is to be located, and in this tank is installed a certain amount of spiral coils. The tank is made absolutely water tight and is made to withstand any pressure that may be brought upon it. The water from the city mains is brought into this tank at the top and the suction or cold water is taken out at the bottom. There is a small centrifugal pump attached to this cold water line, and the discharge of this pump circulates the water throughout the building and returns over a loop which is above the highest faucet, back to the tank again. The centrifugal pump is simply for the purpose of keeping the water in motion so that there will always be absolutely cold ice water at the faucet. This system is automatic in operation and takes the advantage of the city pressure for carrying the water to the different floors of the building, thus reducing the amount of power required to operate the plant successfully.

Flooded Type Brine Cooler



1—Expansion Valve.
2—Injector Tee.
3—Ammonia Accumulator.
4—Ammonia Inlet Header.
5—Ammonia Suction Header.
6—Packing Gland.
7—Open Brine Return Bend.
8—Liquid Overflow Fitting.
9—3-inch Packing Ring and Gasket.
10—5-inch Square Flange.
11—3-inch Ammonia Expansion Pipe.
12—Stands.
13—Accumulator Stand.
14—5-inch Brine Pipe.
15—Spiral.
16—Liquid Pre-Cooler.
17—Liquid Pre-Cooler Stand.
18—Blind Brine Return Bend.

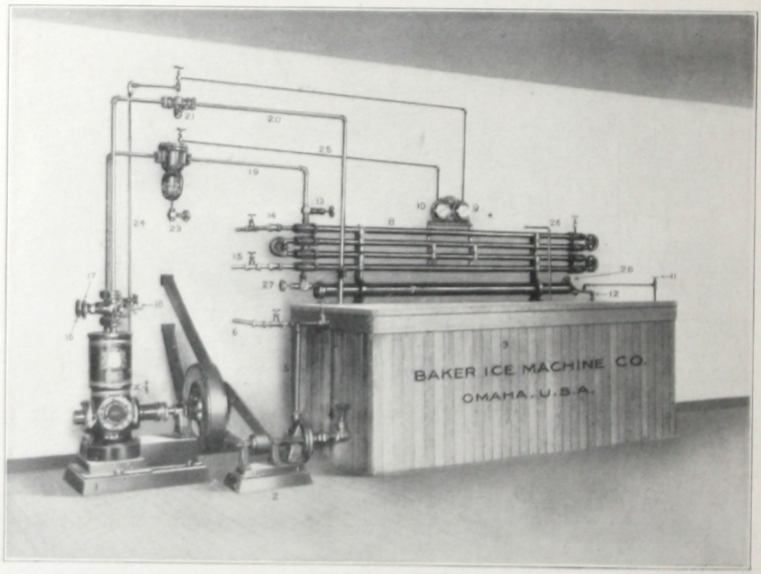
Our Patent Double Pipe Flooded Type Brine Cooler has all the advantages of the flooded system and none of the disadvantages. Our apparatus is at all times under the eye of the operator, while other flooded systems are submerged in a tank of brine beyond the control or sight of the party operating the plant. The increase in the capacity of the machine with our flooded system is very marked—often as great as 30%.

Tons Capacity	Number Pipes	Length	Weight	Price
4½	4	12 feet	1500	$245.00
6¾	6	12 feet	2100	330.00
9	8	12 feet	2700	410.00
11¼	10	12 feet	3300	495.00
13¼	12	12 feet	3900	585.00
9	4	22 feet	2100	310.00
13½	6	22 feet	3000	420.00
18	8	22 feet	3900	535.00
22½	10	22 feet	4800	650.00
26½	12	22 feet	5800	800.00

NOTE—Above prices include Accumulator and Liquid Pre-Cooler.

Write for Discounts.

Complete Small Ice Making and Refrigerating Plant

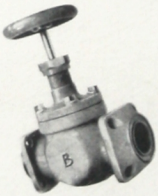


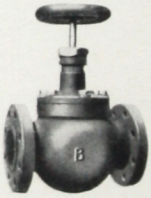
No. 1—Our Double Cylinder Ammonia Compressor.
No. 2—Centrifugal Brine Pump.
No. 3—Ice Making Tank.
No. 4—Valve on the Suction of the Brine Circulating Pump.
No. 5—Discharge Pipe from Brine Pump.
No. 6—Pipe leading to Cold Storage Boxes to be Refrigerated.
No. 7—Ammonia Liquid Receiver.
No. 8—Ammonia Double Pipe Condenser.
No. 9—Low Pressure Ammonia Gauge.
No. 10—High Pressure Ammonia Gauge.
No. 11—Ammonia Expansion Valve.
No. 12—Ammonia Charging Valve.
No. 13—Main Inlet Valve of Ammonia Condenser.
No. 14—Outlet of Water from Ammonia Condenser.
No. 15—Inlet of Water to Ammonia Condenser.
No. 16—Main Discharge Valve on Compressor.
No. 17—Main Suction Valve on Compressor.
No. 18—By-pass Valve on Compressor.
No. 19—Discharge Line from Ammonia Compressor to Condenser.
No. 20—Suction Line from Coils in Ice Making Tank to Compressor.
No. 21—Scale Trap on Suction Line to prevent scale or foreign substance getting into the Ammonia Compressor Cylinders.
No. 22—Ammonia Oil Separator.
No. 23—Blow-off Valve for Ammonia Oil Separator.
No. 24—Equalizing Line from Crank Case of Compressor to Suction Line.
No. 25—Gauge Line leading from Ammonia Oil Trap to the High Pressure Gauge.
No. 26—Brine Return Pipe from Cold Storage Rooms.
No. 27—Main Valve connecting the Ammonia Condenser to the Ammonia Liquid Receiver.
No. 28—Main Liquid or Shut-off Valve on Ammonia Liquid Receiver.

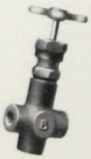
Cold Storage Temperatures as Usually Carried

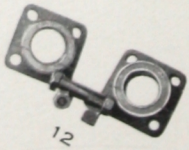
Apple Butter	42
Apples	30
Asparagus	33
Bananas	45
Beans, Dried	45
Beer, Bottled	45
Berries, Fresh, short carry	40
Butter	14
Butterine	20
Cabbage	33
Canned Fruits	40
Canned Meats	40
Cantaloupes, long carry	33
Cantaloupes, short carry	40
Carrots	33
Celery	32
Cheese, long carry	35
Chocolate Dipping Room	65
Cider	32
Cigars	42
Corn, Dried	45
Corn Meal	42
Cranberries	33
Cucumbers	38
Currants, short carry	32
Dates	55
Dried Meats	40
Dried Fruits	40
Eggs	30
Figs	55
Fish, Fresh Water, frozen	18
Fish, not frozen, short carry	28
Fish, Salt Water, frozen	15
Fish, to freeze	5
Flour	42
Fur and Fabric Room	28
Furs, Undressed	35
Game, frozen	10
Game, short carry	28
Game, to freeze	0
Grapes	36
Hams, not brined	20
Hogs	30
Hops	32
Lard	40
Lemons, long carry	38
Lemons, short carry	50
Livers	20
Meats, Fresh, long carry	30
Meats, Fresh, short carry	35
Nursery Stock	30
Nuts in shell	40
Oat Meal	42
Oils	45
Oleomargarine	20
Onions	32
Oranges, long carry	34
Oranges, short carry	50
Oysters, Iced, in tubs	35
Oysters, in shells	43
Parsnips	32
Peach Butter	42
Peaches, short carry	50
Pears	33
Peas, Dried	45
Pickled Salmon, Mild, Cured	33
Plums, long carry	32
Potatoes	34
Poultry, frozen	10
Poultry, Dressed, iced	30
Poultry, short carry	28
Poultry, to freeze	0
Rasins	55
Ribs, not brined	20
Salt Meat Curing Room	33
Sauerkraut	38
Sausage Casings	20
Scallops, frozen	16
Shoulders, not brined	20
Strained Honey	45
Sugar	45
Syrup	45
Tenderloin, etc	33
Tobacco	42
Tomatoes, Ripe	42
Water Melons, short carry	40
Wines	50

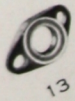
Ammonia Valves and Flanges











No. 1—Round Flange Globe Valve.
No. 2—Square Flange Globe Valve.
No. 3—Oval Flange Globe Valve.
No. 4—Oval Flange Angle Valve.
No. 5—Square Flange Angle Valve.
No. 6—Oval Flange Expansion Valve.
No. 7—Screw End Angle Expansion Valve.
No. 8—Screw End Globe Expansion Valve.
No. 9—Screw End Tee Expansion Valve.
No. 10—Screw End Angle Valve.
No. 11—Screw End Globe Valve.
No. 12—Square Male and Female Flange.
No. 13—Oval Female Flange.
No. 14—Oval Male Flange.

We issue a complete Fitting Catalog.

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